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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/730,158	12/05/2000	Robert A. Lieberman	99/105	6863

7590 07/31/2002

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EXAMINER

LAVARIAS, ARNEL C

ART UNIT	PAPER NUMBER
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2872

DATE MAILED: 07/31/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/730,158

Applicant(s)

LIEBERMAN ET AL.

Examiner

Arnel C. Lavarias

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8, 17-19, 21-23 and 25-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 17, 21, 26 and 27 is/are rejected.
- 7) ☒ Claim(s) 6-8, 18, 19, 22, 23 and 25 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 March 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_ 6) ☐ Other:

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election with traverse of Species (e), (r), and (y) in Paper No. 9 is acknowledged.
2. The restriction requirement is hereby withdrawn in light of the fact that the Applicant and the previous Examiner were unable to clarify the restriction requirement in Paper No. 6, dated 3/7/02, Paper No. 7, dated 4/16/02, and Paper No. 9, dated 6/12/02. Claims 1-8, 17-19, 21-23, and 25-27 are now pending in the present application.

### ***Priority***

3. This application appears to be a division of Application No. 09/334845, filed 6/16/99, now U.S. Patent No. 6205263. A later application for a distinct or independent invention, carved out of a pending application and disclosing and claiming only subject matter disclosed in an earlier or parent application is known as a divisional application or "division." The divisional application should set forth only that portion of the earlier disclosure which is germane to the invention as claimed in the divisional application.

The correction related to this is given in the 'Specification' section of this Office Action.

### ***Drawings***

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4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description:

Figure 1- 'd1'.

A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### *Specification*

5. The disclosure is objected to because of the following informalities:

Page 1, line 1 of the section 'RELATED APPLICATIONS'- 'continuation' should read 'divisional'

Page 3, line 1- 'Fig's' should read 'Fig.'

Page 3, line 6- delete extra period at end of line

Page 4, line 11- '(di)' and '(do)' are not shown in Figure 1

Page 4, line 14- 'N', 'η<sub>1</sub>' have not been defined in the specification

Page 7, line 17- 'charges' should read 'changes'.

Appropriate correction is required.

### *Claim Objections*

6. Claims 6-8, 27 are objected to because of the following informalities:

Claim 6, line 2- 'said core' should read 'said sheath'

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Claim 7 recites the limitation "the core/cladding refractive index ratio" in lines 1-2.

There is insufficient antecedent basis for this limitation in the claim.

Claim 8, line 2- 'said fiber' should read 'said sheath'

Claim 27 recites the limitation "the input end" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Tarbox.

With regard to Claims 1 and 17, Tarbox discloses an optical fiber, said optical fiber (See 18 in Figures 1 or 2) having a core and a sheath (See col. 1, lines 8-11), said sheath having at least one parameter (See 18 in Figures 1 or 2; col. 2, line 66-col. 3, line 9 for description of coiling of fiber to reduce fiber stressing that can result in variations of fiber attenuation along the length of the fiber) that varies from an input end of said fiber to an output end thereof in a manner to maintain a constant power loss per unit length over the length of said fiber (col. 2, line 66-col. 3, line 9).

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 3, 5, 21, 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamburger et al. in view of Tarbox.

With respect to Claims 3, 5, 21, 26-27, Hamburger et al. discloses a distributed fiber optic sensor comprising a multimode optical fiber (See 12, 14 in Figures 1 and 2; col. 2, lines 40-65; col. 5, lines 9-15) having a core (See 12 in Figure 1) and a permeable cladding (See 14 in Figure 1 or 2; col. 2, line 66-col. 3, line 10), said cladding including a composition responsive to an external material to generate a light signal characteristic of that response (See col. 3, line 43-63; col. 5, line 16-col. 6, line 9). Hamburger et al. additionally discloses a light sensor at an output end (See 24 in Figure 2) and a light source in an input end (See 22 in Figure 2). Hamburger et al. lacks the fiber having at least one parameter that varies as a function of position within the fiber to compensate for any non-linear power loss over the length of said fiber. However, Tarbox teaches the optical fiber as disclosed above in Claim 1. Therefore, it would have been obvious to one having ordinary skill at the time the invention was made to incorporate the optical fiber of Tarbox in the distributed fiber optic sensor as disclosed by Hamburger et al. One would have been motivated to do this to provide a highly uniform attenuation characteristic throughout the length of the optical fiber, therefore allowing for

predetermined lengths of optical fiber to be cut which provide a required attenuation value.

11. Claims 2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamburger et al. in view of Tarbox as applied to claim 1 above, and further in view of Cramp et al.

Hamburger et al. in view of Tarbox discloses the invention as set forth above in Claim

1. Hamburger et al. in view of Tarbox lacks the optical fiber wherein the core is fabricated in a manner to be sensitive to a target chemical or a physical quantity.

However, Cramp et al. teaches that the core (See 2 of Figure 1; 14 in Figure 2; 22 in Figure 3) of a distributed optical fiber sensor can be modified, such as by making the core porous (See col. 3, line 67-col. 4, line 11) or treating the core with a material sensitive to a target chemical (See col. 4, lines 12-26), to make the sensor sensitive to analyte to be detected. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the core of the fiber, as taught by Cramp et al., in the optical fiber as disclosed by Hamburger et al. in view of Tarbox. One would have been motivated to do this to decrease the response time of the sensor since detection occurs without the presence of a fiber cladding layer.

#### *Allowable Subject Matter*

12. Claims 6-8, 18-19, 22, 23, and 25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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13. The following is a statement of reasons for the indication of allowable subject matter:

Claims 6-8, 18-19, 22, 23, and 25 are allowable over the prior art for at least the reason that the prior art fails to teach or reasonably suggest the one parameter comprising one of increasing the diameter of the sheath or core from the input end to the output end, the core/cladding refractive index ratio, or an increase in the absorption coefficient or scattering coefficient from an input end to an output end of the fiber.

Tarbox discloses an optical fiber with a substantially uniform attenuation throughout the length of the fiber. However, the only parameter that varies from input end to output end of the fiber is the coiling of the fiber to keep the fiber in a substantially stress free condition. No teaching is evident to have the parameter be one of those as described in Claims 6-8, 18-19, 22, 23, or 25.

Hamburger et al. discloses a distributed fiber optic sensor for determining light transmission characteristics of materials in contact with the fiber. The fiber cladding is disclosed to be 'roughened' to enhance its contact sensitivity. However, no mention is made of requiring the fiber to have a constant power loss per unit length over the length of the fiber.

Neither Tarbox nor Hamburger et al., alone or in combination, disclose or reasonably suggest having the at least one parameter that varies from input end to output end being one of those claimed in Claims 6-8, 18-19, 22, 23, or 25.



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*Conclusion*

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arnel C. Lavarias whose telephone number is 703-305-4007. The examiner can normally be reached on M-F 8:30 AM - 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on 703-308-1687. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1782.

Arnel C. Lavarias  
July 26, 2002



**Cassandra Spyrou  
Supervisory Patent Examiner  
Technology Center 2800**